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December 2010 Newsletter

Archaeological Investigations and LiDAR Aerial Survey in Edgefield, South Carolina

By Christopher Fennell*

The first innovation and development of alkaline-glazed stoneware pottery in America occurred in the Edgefield County area of South Carolina in the early 1800s (Figure 1). It remains an enduring mystery as to how these new ceramic methods were developed in that place and time, and how the techniques of clay choice, temper, and glaze developed over the following

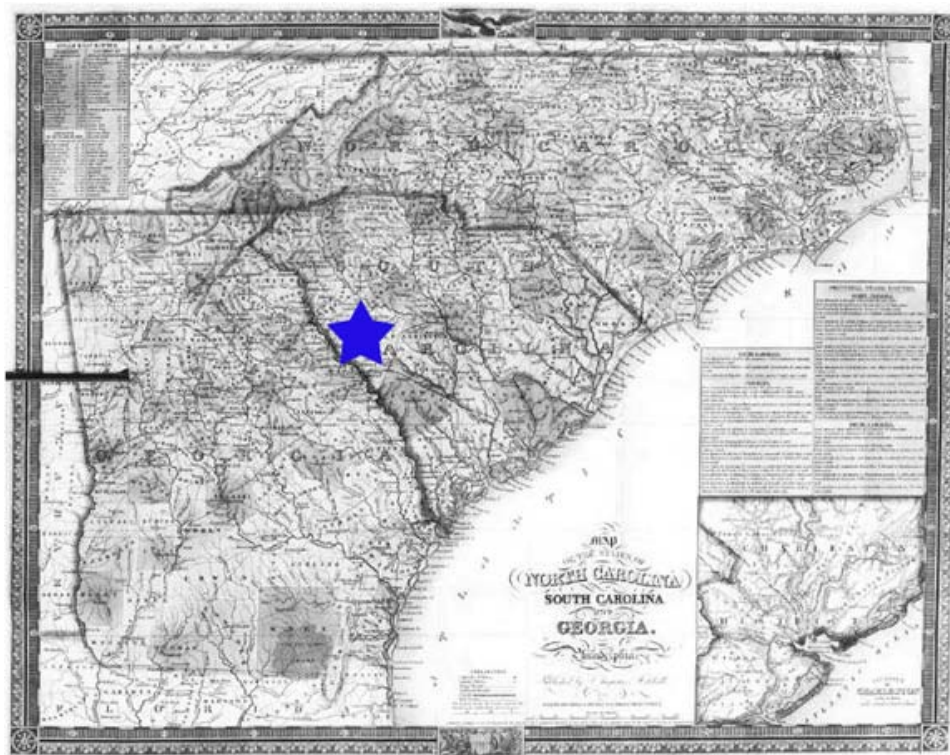


Figure 1. Mitchell 1835 map of North Carolina, South Carolina, and Georgia, with the Edgefield district highlighted by star (archival map image courtesy Hargrett Library Digital Collections, University of Georgia, <http://www.libs.uga.edu/>).

century (Greer 1981; Horne 1990). These potteries employed enslaved and free African-American laborers in the 19th century, and the stoneware forms also show evidence of likely African cultural influence on stylistic designs (Baldwin 1993; Vlach 1990a, 1990b). Edgefield potteries thus present fascinating research questions of understanding technological innovations and investigating the impacts of African cultural knowledge and racial ideologies on a craft specialization during the historic period in America. This project entails an interdisciplinary, collaborative, and archaeological study of the first development in America of alkaline-glazed stoneware pottery forms, the development of that South Carolina industry over time, and the impacts of racism and African cultural influences on those processes.

The technological innovation of alkaline-glazed stoneware pottery was introduced in North America by potteries operated by Abner and John Landrum in the Edgefield area in the first decades of the 19th century. These technological developments by entrepreneurs of Scots-Irish heritage played out in a landscape shaped by racial difference. Numerous African-



Figure 2. Storage jar made by Dave Drake, Edgefield, SC. (Philadelphia Museum of Art collections).

American laborers, including “Dave the Potter” who added inscriptions to his vessels, worked at these production sites (Figure 2). Advertisements in local newspapers in the early decades of the 1800s listed enslaved laborers with skills in pottery production. African Americans most likely participated in all phases of the production process, such as: building and maintaining the kilns; digging and transporting clay; working and grinding raw clay in “pug” mills; chopping wood for

fuel; preparing glaze mixtures, tempers, and clay pastes; turning the pottery wheels and shaping the vessels; and loading and unloading the kiln firings.

As local historians Holcombe and Holcombe (1989:22) observed, the “District’s ceramic entrepreneurs would never have been able to manufacture such large quantities of Edgefield wares without the slave participation.” Indeed, in the period of 1800-1820, the recorded number of enslaved African Americans in the surrounding area had increased to comprise half of the Edgefield District’s population. An illegal transport of enslaved laborers on the ship *Wanderer* delivered newly-captive Africans to the Edgefield District in 1858. The production of remarkably shaped “face vessels” at local potteries have also been analyzed as presenting evidence of the influence of stylistic traditions from cultures of West Central Africa (Figure 3) (Todd 2008; Vlach 1990a, 1990b).

Figure 3. Mid-19th century face vessel produced in Edgefield, SC. (Smithsonian collections).



This project seeks to undertake detailed archaeological investigations of principal sites in Edgefield, conduct archival research, and start a multi-year community engagement and education program related to these subjects. Archaeological field schools and research teams at such pottery sites can explore both the production facility remains and the residential sectors for the enslaved and free African-American laborers. Primary research questions include: (1) examining the distribution of work areas and residential locations in each pottery site and analyze the degree of spatial segregation due to the impacts of slavery and racism; (2) understanding differential uses and development of those work and residential spaces, as reflected in archaeological features and artifact distributions, and the degree to which variations correlate with different racial categories associated with the occupants; (3) analyzing faunal and

botanical remains to explore and contrast dietary and health patterns between residential sites and the degree to which variations correlate with different racial categories associated with the occupants; and (4) understanding the development and changes over time in the technologies of pottery production at these manufacturing sites.

Archaeological Field School

A six-week archaeological field school in 2011 will focus on the site of Pottersville (earlier called “Landrumsville”), where Abner Landrum started the first stoneware production facility in the Edgefield district in the early 1800s (Figure 4). We will excavate the kiln and related production areas and conduct surveys to locate the house sites of the craftspeople and laborers who created the Pottersville village surrounding that manufacturing facility. Instructors



Figure 4. Excerpt of Map of the Edgefield District, SC., surveyed by Thomas Anderson, 1817, printed in Robert Mills Atlas, 1825 (Courtesy Library of Congress).

will include the author, U. Illinois doctoral student George Calfas, and archaeologist Carl Steen of Diachronic Research Inc., among others. In 2009, Calfas launched a project of compositional analysis of the differential mineral contents of clay sources and ceramic sherds from several

Edgefield potteries, and he plans to continue this field work in 2011 as well. A collaborative group of researchers, advisors, consultants, and community members provide guidance for our research activities and plans, including (among others) Vernon Burton, Beth Cali, Chris Espenshade, Leland Ferguson, Stephen and Terry Ferrell, Joe Joseph, Ken Kelly, Jill Koverman, Ethan Lasser, Robert Marcom, Carol McDavid, Jon Prown, Bettis Rainsford, Edward Redman, Tim Scarlett, Stan South, Sean Taylor, Robert Farris Thompson, Leonard Todd, John Michael Vlach, and Terry Weik.

This field school will provide training in the techniques of excavation, mapping, controlled surface surveys, artifact classification and contextual interpretation. Students will work in supervised teams, learning to function as members of a field crew, with all of the skills necessary for becoming professional archaeologists. Laboratory processing and analysis will be ongoing during the field season. Evening lectures by project staff, visiting archaeologists, and historians will focus on providing background on how field data are used to answer archaeological and historical research questions. The instructors and students will stay in local housing in the Edgefield area during this six-week field school, and visit nearby archaeology sites and museums on weekend trips. Additional information and updates on the field school are available online at <http://www.histarch.uiuc.edu/Edgefield/>.

LiDAR Aerial Survey

The University of Illinois has also provided funding support to conduct a low-altitude aerial survey using Light Detection and Ranging (LiDAR) technology to determine the actual spatial extent and contours of the Pottersville production center and surrounding cultural landscape. This first pottery center expanded rapidly to meet a strong demand by neighboring agricultural producers for large, durable storage vessels, and produced a high volume of utilitarian stoneware vessels over several decades. The working village of Pottersville developed around the kiln site. Documentary evidence in 1826 indicates that the complex included 16 to 17 laborer residences, and facilities for preparing clay, turning and shaping the vessels, and firing ceramics in a cross-draft, “groundhog” style kiln. This production center, with its associated village of laborers, operated at least through the 1850s, with a succession of owners and managers (Mills 1826; Vlach 1990b). The site of the Pottersville kiln is already recognized as

nationally significant based on historical, documentary evidence, and is listed on the National Register of Historic Places (NPS 2009). However, no in-depth archaeological investigations have been undertaken there. Archaeological reconnaissance surveys conducted in 1977 and 1987 demonstrated that the kiln site is intact, but no surveys have been undertaken of the surrounding area that contained the craft village (Castille 1998; Steen 1994).

This remote-sensing aerial survey will provide a micro-topographic map of the landscape surface for a five-square-mile area surrounding the Pottersville kiln. This high resolution, three dimensional surface map will reveal surface contours shaped by the buried remains of the surrounding pottery production facilities and neighboring residential locations of the enslaved African-American laborers, none of which have been located to date. These cultural features will be subject of archaeological investigations in a multi-year project we have launched in Edgefield, which will include archaeological field schools and future applications for larger-scale grant support.

The use of low altitude aerial surveys with high-resolution LiDAR imaging has been applied successfully at prehistoric and historic-period sites in the United States (Harmon et al. 2006; Petzold et al. 1999; Riley 2009). LiDAR technology transmits a stream of high-resolution laser light to the ground surface and records the differential time with which each pulse is reflected back to a receiving device (Figure 5). This high-resolution survey method records a three-dimensional elevation map of the micro-topography of the ground surface, accurate to mere centimeters of spatial resolution. Importantly, the stream of laser pulses penetrate beneath any vegetation coverage to measure the underlying undulations of the ground surface, producing a high-resolution, “bare earth,” micro-topographic map of features impacting the ground surface contours. LiDAR surveys have been used successfully on other sites to detect historic-period roads, pathways, and site contours not readily visible on the surface. LiDAR surveys can also detect the surface manifestations of buried archaeological remains of structures and activity areas that were otherwise obscured from visibility by vegetation cover (Ackermann 1999; Harmon et al. 2006; Petzold 1999).

LiDAR will be collected across 5.0 square miles of landscape, centered on the Pottersville kiln site, with multiple points per square meter and elevation resolution with an error factor of no more than 15 centimeters for each data point. The LiDAR survey will provide a

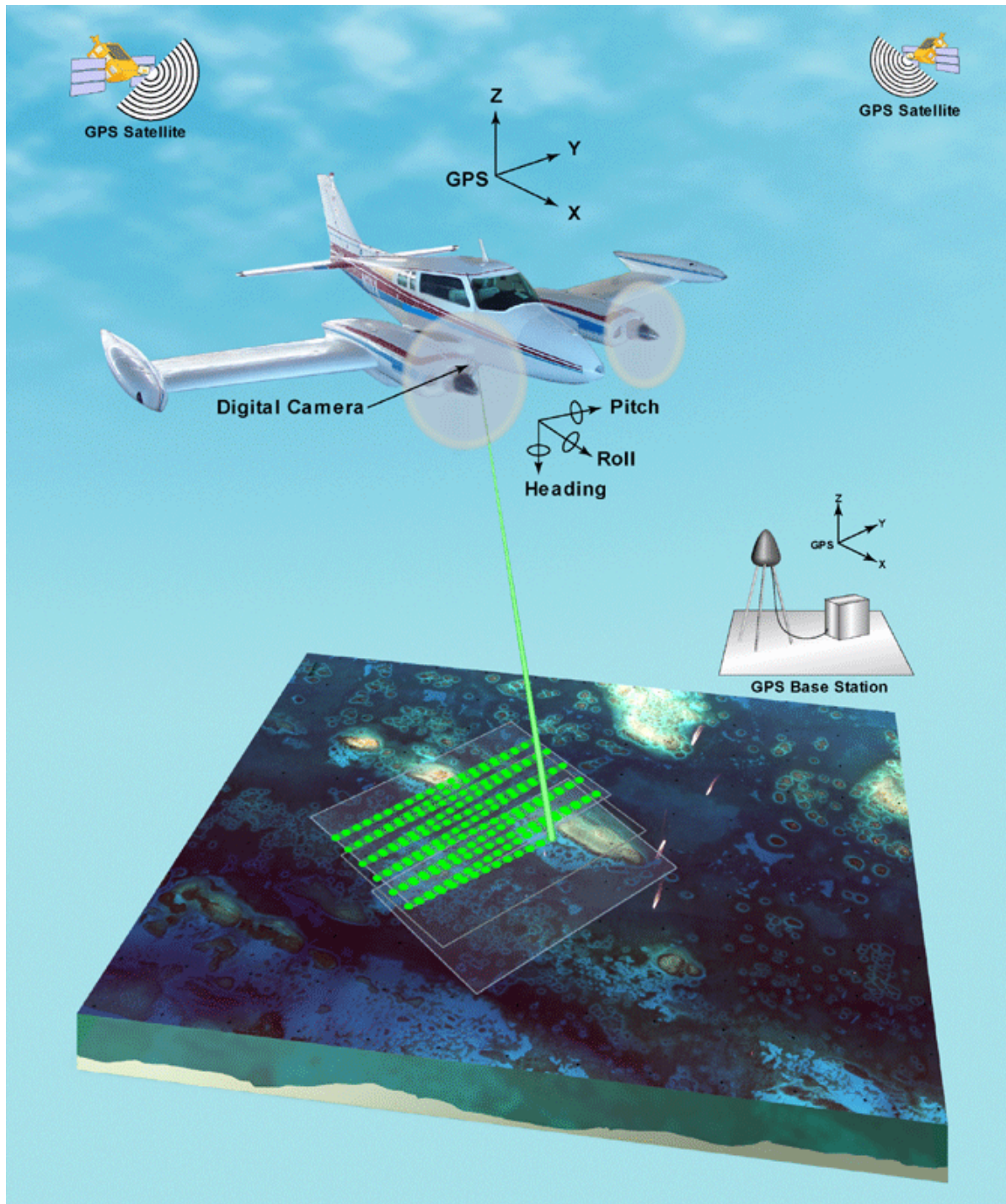


Figure 5. This illustration from the U.S. Geological Survey web site details the main components and process for collecting LiDAR aerial survey data (image courtesy U.S.G.S. http://gulfsci.usgs.gov/tampabay/data/1_bathymetry_lidar/index.html)

micro-topographic data set across the contours of that area with surface contours measured to bare earth levels. LiDAR data will be acquired using aircraft equipped with an Optech Gemini Airborne Laser Terrain Mapper sensor array or comparable Leica ALS system. These systems utilize variable pulse and scan rates that enable the sensors to adapt immediately to varying topography and ground cover. This multipulse technology thus provides the data acquisition benefits of acquiring maximum point density in the most cost-effective manner.

Employment of such LiDAR surveys from low-altitude aerial platforms is particularly valuable when the resulting data are incorporated into a Geographic Information Systems (GIS) database and compared and contrasted with other types of archaeological and remote sensing data (Ackermann 1999; Harmon et al. 2006). In this project, the LiDAR data will be incorporated into a GIS database and evaluated in comparison with visible-spectrum aerial photographs, satellite images, plat maps, geological surveys, and historic-period maps. The results of this LiDAR survey will also provide a template for planning ground-based excavations scheduled for 2011.

Future Plans

In our larger-scale research initiative, we seek to understand how European Americans and enslaved African Americans negotiated the impacts of racism and the institution of slavery in the unique setting of the Edgefield pottery district. In those craft communities, African Americans worked in an array of unskilled and skilled occupations to produce a remarkable volume of ceramic wares. This project will contribute to understanding facets of the changing meanings of racism in particular periods and locations by investigating the ways in which racial ideologies were created and maintained or at times subverted and dissipated. This research will also contribute to a growing, comparative set of studies addressing the contours of racism, slavery, and economic enterprise in the periods of slavery and in post-emancipation developments of the later 19th century (e.g., Burton 1985; Fennell et al. 2009; Ferguson 1992; Leone et al. 2005; Omi and Winant 1994; Upton 1988).

Note

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